

1890 INSTITUTION TEACHING AND RESEARCH CAPACITY BUILDING GRANTS PROGRAM

DESCRIPTIONS OF FUNDED PROJECTS

Fiscal Year 1999

**Higher Education Programs
Science and Education Resources Development
Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
Washington, D.C. 20250-2251**

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1890 INSTITUTION TEACHING AND RESEARCH CAPCITY BUILDING GRANTS PROGRAM DESCRIPTIONS OF FUNDED PROJECTS

The 1890 Institution Teaching and Research Capacity Building Grants Program was launched in fiscal year (FY) 1990 to achieve three major goals: (1) to strengthen linkages among the 1890 institutions, other colleges and universities, the U.S. Department of Agriculture (USDA), and private industry; (2) to advance cultural diversity of the food and agricultural scientific and professional work force by attracting and educating more students from underrepresented groups; and (3) to enhance the quality of teaching and research programs at the 1890 institutions to more readily establish them as full partners in the U.S. food and agricultural sciences higher education system. It is designed to be a high impact program and is unique in that it is the only Federal initiative targeted specifically towards strengthening the quality of programs in the food and agricultural sciences at the historically Black land-grant institutions.

The Capacity Building Grants program is administered by the Higher Education Programs office in the Science and Education Resources Development division of the Cooperative State Research, Education, and Extension Service. This program is competitive in nature and provides support to the 1890 Institutions and Tuskegee University for teaching and research projects in targeted high-priority areas.

In FY 1999, \$9,200,000 were appropriated for the tenth year of the program. One hundred and eighty two proposals were received in FY 1999 representing a total funding request of approximately \$42 million. These included 110 research and 72 teaching proposals. Grant applications were reviewed by a peer panel comprised of 52 experts representing university educators and research scientists, Federal Government professionals and individuals from the private sector who possessed outstanding expertise in the food and agricultural sciences as well as comprehensive knowledge of the 1890 university system.

Of the \$9,200,000, available, \$4,366,280 were allocated to support 25 teaching projects and \$4,255,881 were allocated to support 18 research projects. Awards were made to each of the 16 1890 land-grant institutions and Tuskegee University. Targeted need areas for teaching projects included curricula design and materials development, faculty preparation and enhancement, instruction delivery systems, student experiential learning, scientific instrumentation for teaching, and student recruitment and retention within the fields of agriculture, natural resources, forestry, veterinary medicine, family and consumer sciences, and closely allied disciplines. Research areas included studies and experimentation in the food and agricultural sciences, establishment of centralized research support systems, and development of improved technology delivery systems for producers and consumers in the food and agricultural sciences network.

USDA AGENCY/COLLABORATOR ABBREVIATIONS

| | |
|---------------|---|
| APHIS | Animal and Plant Health Inspection Service |
| ARS | Agricultural Research Service |
| CSREES | Cooperative State Research, Education, and Extension Service |
| ERS | Economic Research Service |
| FS | Forest Service |
| NRCS | Natural Resources Conservation Service |
| RD | Rural Development |

Descriptions of funded teaching and research projects follow:

TEACHING PROJECTS

Proposal Number: 9904081
Grant Number: 99-38820-8222
Project Director: Udai Bishnoi
Award Amount: \$180,000

Institution: Alabama A&M University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Loren Wiesner 970 495-3223

To Strengthen Graduate Curricula in Seed Science. Alabama A&M University proposes to strengthen its existing curricula and laboratory facilities to offer graduate level specialization in seed science and technology within Crop and Forest Sciences. The specific objectives of this project are: (1) develop seed science and technology graduate curriculum, (2) equip and improve the existing seed science teaching laboratory as a research training facility, (3) establish and introduce modules for field testing the genetically engineered seeds, (4) recruit at least four minority students in the graduate program specializing in forestry and crop seed science/biotechnology, and (5) organize student/faculty interactions with USDA and other agencies. An innovative approach has been developed to strengthen the background of minority graduate students and the research capabilities of the institution. The contents of six of the existing graduate courses will be upgraded with biotechnological and advanced research techniques. One new course will be developed and added to the curriculum. This project has been developed in cooperation with USDA's National Seed Storage Laboratory in Fort Collins, CO; and the University of Houston, a non land-grant minority serving institution. The cooperators will offer internships, training, and employment. The project will enhance the capabilities of minorities to start their own seed technology businesses and/or become Seed Scientists with M.S. and Ph.D. degrees.

Proposal Number: 9904037
Grant Number: 99-38820-8310
Project Director: Bernice Richardson
Award Amount: \$178,382

Institution: Alabama A&M University
Project Duration: 3 Years
USDA Agency/Collaborator: CSREES/F-4HN
Gladys Vaughn 202 720-2864

Recruitment and Retention in the New Millennium: Family and Consumer Sciences Faculty and Students Fostering a Vision of Change. This project addresses the need area of student recruitment and retention with the purpose to increase the number of students, especially minority individuals, in the food and agricultural sciences. Recruitment and retention of students will increase the pool of qualified professionals in the food and agricultural sciences. Faculty members in Family and Consumer Sciences (FCS) will take the lead role in developing techniques to better serve existing and new students through the use of pre-professional development, recruitment and mentoring activities. The projects four objectives are: (1) to implement an intensive career awareness program aimed at expanding the knowledge of and career opportunities in FCS among secondary, junior college and nontraditional students; (2) develop and implement an intensive marketing program aimed at highlighting the benefits of careers in FCS; (3) promote student retention by developing and implementing a faculty/student mentoring program, and enhancing structured pre-professional activities (Bridge Program); and (4) enhance the FCS faculty's capacity for participating effectively in recruitment, teaching and retention activities. A strategic marketing plan will be developed that utilizes various marketing tools. Information will be disseminated to FCS professionals and other university programs for possible replication based on the projects results.

TEACHING PROJECTS

Proposal Number: 9904052
Grant Number: 99-38820-8216
Project Director: Wesley Whittaker
Award Amount: \$160,678

Institution: Alcorn State University
Project Duration: 2 Years
USDA Agency/Collaborator: RD
Eloise Thomas 202 690-4730

Enhancing Existing Agricultural Economics Curriculum and Increasing Student Experiential Learning in Rural Poverty and Area Development. This project will enhance the curriculum in agricultural economics by incorporating the study of rural poverty and area development. The project will use various experiential learning approaches to expose students to current and emerging social and economics forces affecting communities, especially in light of global economic changes. The project will develop collaborative links with individuals and organizations involved in rural development and public organizations in acquiring first-hand knowledge and experience while helping to empower people to resolve problems of poverty and rural development. As a history, rural people have constantly been exposed to a number of factors that seriously impinge on their economic well-being and constrain them to subsist at or below the poverty threshold. Currently, university academic curricula do not address these core problems of respective communities. Students are currently not given the opportunity to intellectually discuss and appreciate issues such as poverty concentration and persistence, the attributes of rural communities, rural-urban biases and alternative strategies that might be effective in promoting development in rural areas. This project proposes to fill this significant void in the curriculum at Alcorn State University. Project funds will be used to provide internships for students, acquire instructional materials and to support project personnel. The expected outcomes will stimulate great interest in the study of poverty and rural development in students.

Proposal Number: 9904189
Grant Number: 99-38820-8278
Project Director: Samuel Scott
Award Amount: \$179,780

Institution: Alcorn State University
Project Duration: 3 Years
USDA Agency/Collaborator: CSREES/PAS
Dennis Ebodaghe 202 401-4385

Development of Off-Campus Distance Learning, Educational and Outreach Sites for Small Farmers. Alcorn State University will enhance the delivery of outreach to small-scale farmers and cooperatives and provide opportunities to link students attending high schools with agricultural programs directly to the University; thereby, exposing these students to agriculture, attracting and retaining future farmers and agri-entrepreneurs, enhancing the University's recruitment pool. The overall objective of the project is to develop a distance education program, through the establishment of distance learning sites, thereby implementing an agricultural telecommunication network. The delivery systems will be used to transmit educational programs including, course lectures, workshops, seminars, and conferences. This system is to be developed to reach 300 small farmers and 600 youths within the first year. Some of the expected outcomes include further development and expansion of the University's agricultural and rural business distance education program. This project will facilitate the access and expansion into new areas as needed. Several units at the University recognize the need for alternative methods of program delivery and distance learning. Small farmers and farm families, as well as youths, will be able to gather and use the requisite information as a major resource in on-farm decision-making processes, and entering into agriculture as a profitable career.

TEACHING PROJECTS

Proposal Number: 9904019
Grant Number: 99-38820-8224
Project Director: Richard Barczewski
Award Amount: \$179,100

Institution: Delaware State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Gary Richards 302 739-5207
John Cherry 215 233-6595

Recruitment and Retention of Students Within the Animal and Poultry Sciences. The objectives of this project are: (1) to provide scholarships to attract and retain high quality students interested in the Animal Sciences; (2) develop an Ambassador program for students within Animal and Poultry Degree to serve as spokesperson for the degree option at area middle and high schools and other educational events; (3) augment existing teaching facilities through the development of an on campus laboratory where hands-on animal sciences activities can be conducted; (4) enhance the competencies of students through greater exposure to extensive, practical curricula in animal sciences, including visiting representatives from the agricultural industry, field trips and internship development with ARS, industry and other educational institutions; and (5) improve curricula and materials in an effort to better train Delaware State University graduates for occupations within the agricultural sector, including the acquisition of needed livestock equipment and animals. This project will further the goals of the institution by enhancing the resources to attract and retain students within the animal and poultry sciences.

Proposal Number: 9904051
Grant Number: 99-38820-8309
Project Director: Verian Lamikanra
Award Amount: \$198,988

Institution: Florida A&M University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Morse Solomon 301 564-8400

Raising Agriculturally and Technologically Literate Rattlers (RATLR): Cultivating Research Scholars (CURS) in Food and Agricultural Sciences. This project will provide students with a research mentoring program in the food and agricultural sciences. The overall goals are to increase the number of qualified and interested minority students for graduate research training; enhance faculty capability to teach and conduct research in emerging areas of interest; and to strengthen the relationship between Florida A&M University (FAMU) and collaborating universities and agencies. During the course of the project, first year students will attend a one credit course which focuses on career and graduate sciences educational opportunities presented by students, food and agricultural sciences faculty at FAMU, and research/visiting scientists from the collaborating institutions. Scholars will be required to conduct an honors research project, giving oral presentations and developing and presenting a written thesis. Faculty mentors will offer faculty training in teaching methodology and techniques, problem based learning, and assessment techniques. Implementation of this project will: (1) increase the number of qualified minority students in graduate programs in the food and agricultural studies; (2) increase the number of minorities interested in careers in the graduate degree programs; (3) improve faculty teaching and increase faculty research productivity, and (5) strengthen the on-going linkages between FAMU and its collaborating institutions and laboratories in the food and agricultural sciences.

TEACHING PROJECTS

Proposal Number: 9904196
Grant Number: 99-38820-8279
Project Director: Curtis Borne
Award Amount: \$89,408

Institution: Fort Valley State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Peggy Blake 301-504-6780

Phase II of Agriscience and Technology Teaching Laboratory. This project is the second phase of a two phase project. Phase I was the establishment of the only post-secondary Agriscience and Biotechnology Teaching Laboratory in the state. Technical laboratory equipment was purchased and two agriculture buildings were equipped for satellite communications with the Data Transmission Network (DTN) and Ag Ed Network. Phase II funds will be used to purchase updated computers. These new computers will be used to train the large number of high school agriscience teachers now planning to grant science credit for their courses. An air tight glass wall and lower ceiling are needed in order to maximize the efficiency of the geothermal cooling system that was installed during phase I of the project. Sensors with computer connections are needed to make the geothermal system a true teaching and research model. Subscription to the DTN Satellite System will be renewed in order to continue the recruitment and teaching activity. Funds for this project will enable the university to: (1) equip the laboratory with computers suitable for CD ROM and multimedia instruction, (2) certify agriculture teachers for granting science credit for agriscience courses, (3) provide continued use of DTN Satellite and AG ED Network for distance learning and instruction, and (4) provide air tight room conditions for geothermal energy demonstrations.

Proposal Number: 9904045
Grant Number: 99-38820-8311
Project Director: Mark Garrison
Award Amount: \$177,010

Institution: Kentucky State University
Project Duration: 3 Years
USDA Agency/Collaborator: CSREES, F4HN
Anna Mae Kobbe 202-720-2920

Creating and Utilizing a Comprehensive USDA Science Intranet at KSU and FIS. This project is designed to address the three major program purposes of the USDA 1890 Institution Teaching Capacity Building Grants Program for 1999. The project will attract minority students to career in the food and agricultural sciences through collaborative projects initiated at multiple grade levels, expand linkages between Kansas State University (KSU) and the school districts in their area, and will strengthen the teaching capacity of the science faculty at KSU and regional school districts through the development of a Comprehensive Science Intranet that provides a vehicle of communication and collaboration among science teachers and students. KSU will create a structured, technological environment for university and public school science faculty to engage in collaboration as peers. The purpose of the collaboration will be to develop project oriented lessons designed to enhance science instruction for under represented groups at various education levels. Through collaboration among KSU faculty, KSU USDA supported researchers, and middle school science teachers at Frankfort's Second Street School, interactive Web-based learning projects will be developed and made available through an Intranet/Internet. These lessons will teach basic science, genetics, ecology and nutrition. College and middle school students will also participate in the development of the learning projects. The science projects developed in this process would be as encompassing as possible, allowing participating students to engage in the learning to the depth appropriate to their age and interests.

TEACHING PROJECTS

Proposal Number: 9904017
Grant Number: 99-38820-8215
Project Director: George Acquah
Award Amount: \$180,000

Institution: Langston University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Joseph Saunders 517-355-9280

Enhancing Food and Agricultural Curricula Through Geospatial Information Technology.

This project is designed to establish a geospatial facility at Langston University (LU), and to develop courses for students and faculty to receive formal training in the use of Geographic Information System (GIS) /Global Positioning System. Two courses will be developed. One will be introductory and designed to expose students to the nature and applications of the technologies. The second and more advanced course is designed for more detailed use of the technologies, and will require students to conduct projects and write detailed reports. The project will be located in the Department of Agriculture and Natural Resources but will benefit the entire university since the technology is applicable in nearly all disciplines. Once the lab is established, faculty and staff will receive training through a series of workshops to be organized during the school year and in the summer. This facility will enable LU faculty and staff to collaborate more effectively with their counterparts in other institutions where the technology is already in place, and can compete more effectively for competitive projects. The expected outcomes of the project will be shared with other institutions. The Bureau of Land Management and USDA, two of the principal collaborators, will benefit from training qualified minorities for the job applicant pool from which they can hire. The other major collaborator from industry, ESRI the world-renowned leaders in the GIS technology, will be a major asset to the project in terms of technical support and sustainability.

Proposal Number: 9904020
Grant Number: 99-38820-8363
Project Director: Frieda Elvazi
Award Amount: \$153,905

Institution: Lincoln University
Project Duration: 3 Years
USDA Agency/Collaborator: APHIS
Russel Reidinger 573 681-5134

Using Computer Technology to Enhance Agriculture Curriculum. This project will teach students agricultural subjects in classrooms that take full advantage of today's computer technology and train faculty to be sufficiently skilled in the use of multimedia in their courses. This project will be accomplished over three years. Existing classrooms will be retrofitted to deliver multimedia instruction to agricultural students. Faculty will be trained to deliver agriculture instructions using multimedia technology. They will then be able to acquire and incorporate existing software in their classes. Instruction will occur in multimedia classrooms designed to take advantage of today's computer technology. Lincoln University will provide space for the facility by retrofitting two existing classrooms. Progress will be evaluated annually and at the end of the project by the principle investigators. The project will strengthen the faculty's ability to present difficult concepts to students in ways that achieve the greatest clarity and opportunity for understanding. This is particularly important in the agricultural and related sciences where subject matter is frequently complex, involving multi disciplinary principles, processes, and phenomena. Lessons learned from the proposed general approach will be shared with other land-grant institutions and will result in both regional and national impacts. The outcome of this project will be shared with other teaching faculty at other universities.

TEACHING PROJECTS

Proposal Number: 9904025
Grant Number: 99-38820-8211
Project Director: Geraldine Ray
Award Amount: \$179,966

Institution: North Carolina A&T State University
Project Duration: 3 Years
USDA Agency/Collaborator: CSREES/F-4HN
Gladys Vaughn 202 720-2864

Strategies to Increase the Pool of Minority Teachers. This project involves expanding the capacity of North Carolina A&T State University to train qualified students, especially African Americans, to become secondary teachers in the disciplines of family and consumer sciences education, birth through kindergarten education, and agricultural education using technology-assisted instruction. The University's capacity will be enhanced in three ways: (1) develop a series of multimedia computer enhancement tutorials for birth through kindergarten (B-K) education, family and consumer sciences education, and agricultural education (AG-ED); (2) establish a mentoring program through which senior level B-K, FCSE, and AG-ED students will mentor freshman level education students; and (3) increase library holdings in the disciplines. The intent of the proposal is to use the already established multimedia computer labs to increase the ability of education majors to pass the PRAXIS Series Exam. The success of this project will be based on an increase in the number of students who remain in the School of Agriculture's Education Program and increase the number of students who pass the PRAXIS Series Exam the first time. Evaluation measures will consist of recorded observations and narrative accounts from levels of participation.

Proposal Number: 9904034
Grant Number: 99-38820-8213
Project Director: A. Shahbazi
Award Amount: \$179,958

Institution: North Carolina A&T State University
Project Duration: 3 Years
USDA Agency/Collaborator: CSREES/CTDE
Terry Meisenbach 202 720-2677

Development and Delivery of Four Web-based Courses. This is a two-year collaborative project designed to strengthen the Agricultural Engineering, Agricultural Education, Animal Science, and Earth Science curriculum through designing interactive course materials and delivering them via the Internet. The audience of these courses are college students and agricultural professionals working in the field. The objectives are: (1) to develop Web-based courses by transferring course materials to HTML format and designing multimedia-based supplemental course modules; (2) conduct course evaluation and compare student learning under traditional instructional environment and Internet Instructional environment, and (3) provide Web-course development and evaluation training to faculty members in the School of Agriculture. This project will improve student capabilities in each subject matter and their communication / computer skills. Better teaching methods and better students will ultimately help to present agricultural professions as attractive career options to high school students and teachers. The design and delivery of courses with the latest technologies will ensure recruitment and training of high-quality minority students in agricultural careers. This will improve the diversification of the workforce during the 21st century. Beneficiaries of this project will include state and federal agencies, agricultural manufacturers and distributors, schools and universities nationwide, and the general public.

TEACHING PROJECTS

Proposal Number: 9904043
Grant Number: 99-38820-8210
Project Director: John Allen
Award Amount: \$165,359

Institution: North Carolina A&T State University
Project Duration: 3 Years
USDA Agency/Collaborator: FS
James C. Brown 336 334-7709

Enhancement of the Laboratory Animal Science Program. The objectives of this project are to enhance the overall effectiveness of North Carolina A&T State University's Laboratory Animal Science Program through: (1) repair or replacement of existing, defective instructional equipment in order to provide more state-of-the-art-instructional experiences; (2) provide financial support for students in the form of research work experiences and funds to participate in research meetings for students; (3) enhance student research and critical thinking skills and increase access to mentors; and (4) provide for continuing development of Laboratory Animal Science Faculty through training and workshops. The Laboratory of Animal Science program, Department of Animal Science, School of Agriculture has provided a cross disciplinary academic program which leads to the bachelor of science degree and to specialization at the graduate level. In addition, a university-wide concentration in Biotechnology has been established in five university departments. The Animal Science Program has used cutting edge technologies, state-of-the-art laboratory animal facilities and faculty of highly skilled Veterinarians and Ph.D.'s to provide an innovative program of instruction and research. The laboratory Animal Science Program at North Carolina A&T State University is the only such undergraduate program of its kind in this country.

Proposal Number: 9904047
Grant Number: 99-38820-8212
Project Director: Anthony Yeboah
Award Amount: \$178,684

Institution: North Carolina A&T State University
Project Duration: 3 Years
USDA Agency/Collaborator: NRCS
Frank Clearfield 336 334-7058

Enhancing the Information Technology Capabilities of the School of Agriculture. North Carolina A&T State University has already upgraded its only computer lab used for instruction in the School of Agriculture, trained faculty from all departments to use the Internet and incorporated Internet components into their curriculum; and prepared course modules for Web-based instruction. Funding of this project will: (1) upgrade the existing computer laboratory to function as a teaching computer laboratory; (2) provide faculty development concentrating on acquiring competencies for using software/hardware in a teaching laboratories, using software more efficiently in the workplace and teaching environment, enhancing current web-assisted courses, and developing web-based courses; and (3) offer courses via the Internet (Web-assisted and Web-based courses). This project will better prepare and enable students to compete in this technology oriented society. It is anticipated that access to technology and Web-based courses will attract new students and ultimately improve enrollment.

TEACHING PROJECTS

Proposal Number: 9904046
Grant Number: 99-38820-8214
Project Director: Alfred Parks
Award Amount: \$180,000

Institution: Prairie View A&M State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Peggy Blake 301 504-6780

Advanced Networks: Advancing Agriculture Science via the Information Superhighway:

Phase II. This project will extend the current distance education system in place at Prairie View A&M University by providing more advanced training in usage and application of multimedia systems, such as integrated computer linkages, multimedia technology, and interactive Internet and Web page development. The goal of this project is to enhance the distance education and outreach capabilities in the College of Agriculture and Human Sciences. The following specific objectives will be addressed: (1) provide faculty/staff/student training in the use of multimedia equipment, (2) engage the faculty/staff in information building for instructional delivery (home pages, spreadsheets, Internet and other developments for distance education delivery, etc), and (3) provide technical support. This will enhance the teaching capacity of each faculty by providing information access and usage. By strengthening the capacity of each faculty, staff and student, this project will thereby strengthen the capacity of higher educational delivery in the food and agricultural sciences at Prairie View, and ultimately the United States. The partnership between USDA's NAL and the university will be strengthened in the process by ready exchange of ideas and information. Students in the college will be better trained and ready to make an immediate contribution upon graduation.

Proposal Number: 9904057
Grant Number: 99-38820-8364
Project Director: Elbert Malone
Award Amount: \$153,886

Institution: South Carolina State University
Project Duration: 2 Years
USDA Agency/Collaborator: RD
Bernie Wright 803 765-5738

Educational Outreach Activities in Food Science Systems. South Carolina State University (SCSU) will implement a student experiential learning program to recruit pre-college youth in grades 10-12 to careers in food and agricultural sciences. SCSU and its consortium members, Clemson University and Denmark Technical College of Agricultural Heritage Center will ensure that professionals in the food and agricultural sciences are intricately involved in the development and implementation of a synergistic experiential learning program that: (1) demonstrates food production, processing and consumption. The objectives of the project are: (1) to stimulate the interest of the targeted group (10th - 12th) to pursue food science as a career by exposing them to real work activities through experiential learning experiences; (2) to increase students' understanding and awareness of the opportunities that exist in food science; (3) provide hands-on experience by assigning scientific research projects in food consumption; (4) foster knowledge of the food science; and (5) employ college students as interns to research materials and serve as mentors to the youth through experiential learning experiences. The project will foster a better understanding to create positive attitudes and increase knowledge about food production, processing and consumption and their interdependence. One outcome will be participants' selection of food or agricultural sciences as a career path, thereby increasing the pool of qualified professionals.

TEACHING PROJECTS

Proposal Number: 9904074
Grant Number: 99-38820-8209
Project Director: Ambrose Anoruo
Award Amount: \$179,970

Institute: South Carolina State University
Project Duration: 2 Years
USDA Agency/Collaborator: FS/ARS
John I. Blake 803-725-8721

Experiential Learning of Agricultural Science for Undergraduates. This project will expose students to the scientific world of agriculture and thus help elevate agriculture as an engaging and challenging professional career. Juniors from HBCU Field Station member institutions who have completed a minimum of 12 credit hours in courses at the Savannah River Environmental Sciences Field Station or similar courses will be recruited. These students will be assigned to the project's two USDA collaborating agencies (ARS and FS) and one private organization (Weyerhaeuser Company). At ARS, students will have hands-on learning of agricultural science in entomology, soil nutrient, nutrient movement in soil and plants, plant genetics selection, plant physiology, root nematode interaction, and fruiting and flowering of agricultural crops. At FS and Weyerhaeuser, they will be introduced to experiential learning of land conservation and will also be trained in forest management. Students will be mentored by scientists from the collaborating agencies in the summer and in the academic year and will consult with the project investigators, who will assist them in securing positions within USDA or, proceed to graduate school.

Proposal Number: 9904059
Grant Number: 99-38820-8223
Project Director: Grace Wasike
Award Amount: \$155,525

Institute: Southern University
Project Duration: 2 Years
USDA Agency/Collaborator: CSREES/FR
William Bailey 202 720-4114

Enhancing Teaching and Recruitment in Food and Fiber Sciences Through Computer Technology. The Division of Family and Consumer Sciences in the Colleges of Agricultural, Family and Consumer Sciences at Southern University recently received an enhancement grant from the Louisiana State Board of Regents to purchase critical computer hardware and software that was needed to establish four workstations for institutional use. That project enhanced the teaching program but there is a need to purchase more equipment to enhance the currently funded project for maximum impact on teaching. The funding of this Capacity Building Grant project will provide funds needed to purchase the computers and software. The specific objectives of the project to: (1) integrate state-of-the-art computer equipment and software to enhance teaching in Food and Fiber Sciences and (2) enhance recruitment and retention of minority students in Food and Fiber Sciences using the Internet. The hard and software purchased would integrate Computer-Aided-Design and manufacturing for Textiles, Computer-Aided Diet Analysis and menu planning, and use of the Internet in the curriculum. The scope of the current curriculum will be greatly expanded with information technology as a result of this project. The project is expected to increase student enrollment, retention, graduation rates, and marketability of graduates for competitive positions in the industry and research.

TEACHING PROJECTS

Proposal Number: 9904023
Grant Number: 99-38820-8221
Project Director: Kit L. Chin
Award Amount: \$199,849

Institution: Southern University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Korona Prince 202 690-2244

Plant and Soil Science Summer Institute - A Tool for Recruitment. Employment data statistics from the USDA indicate low representation of minorities in food, fiber and natural resource progressions. This is particularly acute in the highly academic and scientific research fields. This project is designed to: (1) provide fingertip information about plant and soil science education to selected high school teachers/counselors so they can promote the scientific and technological nature of plant and soil science education in schools and motivate students to pursue these careers; (2) employ the summer institute as an innovative approach to recruit high academic achievers by exposing them to the scientific/technological nature of urban forestry's offerings and available career opportunities and the various cutting edge research activities taking place in the state and the region; and (3) provide summer research internships to further stimulate students' interests and motivate their desire to pursue advanced degree studies to meet the academic demand in this fast growing, continuously changing high-tech society. The plant and soil science summer institute at Southern University will serve as a model to address specific needs of the plant and soil science scientific communities.

Proposal Number: 9904032
Grant Number: 99-38820-8207
Project Director: Surendra P. Singh
Award Amount: \$199,000

Institution: Tennessee State University
Project Duration: 2 years
USDA Agency/Collaborator: ERS
John Dunmore 202 694-5204

A Model of University - Government - Industry Partnership to Improve Agribusiness Education. Agribusinesses in the U.S. whose markets have traditionally been domestic, are now being pulled and pushed into the global arena. As a consequence, the agricultural sector is simultaneously presented with opportunities and threats. Several studies have reported serious shortages of well-trained agribusiness graduates, especially acute among minorities, including women. This project is designed to make important contributions toward alleviating some of these problems by proposing that university, government, and industry work together in partnership to take advantage of the synergy produced by this partnership. The specific objectives of the project are: (1) to increase recruitment and retention of students; (2) to develop a model of effect and sustain entry into export markets; (3) to strengthen the agribusiness curriculum and make it more relevant for preparing graduates to operate in the globally competitive markets; (4) to develop organizations and a plan of action to amplify and expand the "whole person" concept of education in training of agribusiness personnel and enhance library and multimedia resources in support of information regarding product marketing and removal of trade barriers. This project will enable Tennessee State University to build on the successes of previous efforts and contribute to the achievement of its institutional goals.

TEACHING PROJECTS

Proposal Number: 9904021
Grant Number: 99-38820-8308
Project Director: Walter Hill
Award Amount: \$180,000

Institution: Tuskegee University
Project Duration: 2 Years
USDA Agency/Collaborator: NRCS
Maxine Barron 301 504-2229

Streaks of Genius: An Innovative Community-Based Recruitment and Retention Program.

This project focuses on the following goals: (1) to expand current faculty expertise, (2) recruitment of more students with high grade point averages who are committed to graduation, and (3) to provide more meaningful student experiential learning. The project (1) will use multimedia technologies to capture the creativity, innovations and impacts of local community-based innovators and university-based innovators; and (2) use locally developed multimedia products as integral components of recruitment and retention strategies and activities in the targeted counties. This multidisciplinary project will involve faculty and staff from biotechnology, plant sciences, animal sciences, environmental sciences, education, and fine arts. The outcomes of the project will be shared with faculty and staff from co-member institutions of the Southern Food Education Consortium and other consortium of 1890 institutions located in the Black Belt region of the South. Materials will be available for distribution to schools and organizations in the local counties, land-grant and other universities, junior and technical colleges, K-12 schools, agencies and others. Survey and data results will be presented at professional meetings and published on the impact. As a result of this project Tuskegee University will be enhanced by (1) increased enrollment of outstanding Alabama students in College of Agricultural, Environmental and Natural Sciences /Tuskegee University and (2) expansion of the current faculty's involvement in recruitment and retention activities and in use of multimedia technologies. The project will facilitate the development of two new initiatives on leadership development and outreach by USDA - RDA and NCRCS that include the targeted counties for this project.

Proposal Number: 9904076
Grant Number: 99-38820-8276
Project Director: Tsegaye Habtemariam
Award Amount: \$179,538

Institution: Tuskegee University
Project Duration: 3 Years
USDA Agency/Collaborator: APHIS
Richard Fite 301 734-3634

Center for Teaching Risk Analysis and Modelling Using the WWW and Distance

Education. The objective of this grant is to develop resources for teaching risk analysis and disease modelling using the world wide web and related distance-learning technologies. The goal is to extend Tuskegee's existing risk analysis and disease modeling activities to include education undergraduate, graduate, and veterinary students and mid-career professionals in these disciplines. The curriculum will be multidisciplinary, systems-based, and problem-focused. The objectives are to: (1) design a training program in risk analysis and disease modeling, (2) integrate this training into Tuskegee's continuous learning program using distance learning and information technology such as the Internet, the WWW, and CD-ROMs, and (3) create a Virtual Center for Risk Analysis education, research and outreach. Project implementation will include development of a core curriculum, design and creation of student-focused, web based, training materials, and evaluation and revision based on feedback from residential students and distance learners.

TEACHING PROJECTS

Proposal Number: 9904056
Grant Number: 99-38820-8283
Project Director: John Meister
Award Amount: \$197,475

Institution: University of Arkansas at Pine Bluff
Project Duration: 2 Years
USDA Agency/Collaborator: NRCS
Kalvin Trice 501 301-3100

Agricultural Experiential Waste Management and Regulatory Compliance Program. The University of Arkansas at Pine Bluff (UAPB), through a previous Capacity Building Grants developed the nation's first and only bachelor's degree program in Regulatory Science. The primary emphasis has been on preparing students for working with various regulatory agencies in agriculture. This new project will result in the development of a new curriculum in environmental regulatory compliance focusing on agricultural waste management. Its objective is to provide experiential hands-on learning opportunities, dealing with, operating, monitoring, and testing various innovative, alternative agricultural waste treatment technologies. These alternative technologies include options such as constructed wetland cells, composting, mechanical activated sludge, anaerobic digestion with methane capture in contrast to conventional lagoons and land spreading. Several benefits will result. Graduates will be trained and familiar with various agricultural waste management practices. In addition, they will be knowledgeable about agricultural environmental regulations and the activities of federal and state environmental regulatory agencies. Seminars and workshops held at UAPB will provide information and "technology transfer" to members of the agricultural community relating to the principles of agricultural water pollution, waste treatment and environmental regulatory compliance.

Proposal Number: 9904070
Grant Number: 99-38820-8217
Project Director: Anugrah Shaw
Award Amount: \$179,860

Institution: University of Maryland, ES
Project Duration: 3 Years
USDA Agency/Collaborator: CSREES; CTDE
Terry Meisenbach 202-720-2677

Enhancing Instruction Through Web-Assisted Courses. The objectives of the proposal are to: (1) develop four web-assisted courses in the departments of Human Ecology and Hotel and Restaurant Management, (2) equip two classrooms as "smart" classrooms and enhance computer technology capabilities of the Department of Human Ecology, and (3) provide faculty and students with training to increase access to new opportunities to teach and learn. This project will strengthen higher education in the food and agricultural sciences by (a) providing non-traditional instructional methodology (b) increasing student access to course materials, and (c) expanding the technological skills of faculty and students to promote more effective learning. The partnership with CSREES-CTDE will foster faculty development, creation of quality web-assisted courses and dissemination of information regarding the courses. It will also provide university personnel an opportunity to interact with the personnel at CSREES-CTDE and gain information on communication techniques being used by that unit as well as by other land grant institutions. The information regarding this project will be disseminated through presentations at professional conferences and development of web links to selected web sites.

TEACHING PROJECTS

Proposal Number: 9904082

Grant Number: 99-38820-8208

Project Director: Gollakota Jagannadham

Award Amount: \$179,959

Institution: Virginia State University

Project Duration: 2 Years

USDA Agency/Collaborator: ARS

James Everitt 956 969-4824

Remote Sensing and Geographical Information System in Agricultural Sciences. The goal of this joint project is to infuse topics on the Geographical Information System (GIS) in traditional sciences and business courses offered at Virginia State University (VSU). The specific objectives of this proposal are: (1) to conduct workshops for faculty development in the understanding of Geographical Information System technology and its infusion in academic programs at VSU, by seeking the expertise of educators from three partnering universities, (2) to design curricular materials in the sciences and in business that are infused with GIS tools, (3) to develop and offer a new course, Introduction to GIS, at VSU, (4) to establish a Resource Room for GIS applications in VSU's Department of Agriculture for the dissemination of information on GIS technology and career opportunities, and (5) to conduct student experiential learning activities for pre-college students from local high schools and from the Chicago High School for Agricultural Sciences, in order to motivate them to pursue GIS-integrated course work. Participants in the program will learn about the applications of GIS technology and receive technical assistance in preparing curricular materials from educators teaching GIS at the three partner universities. They will meet with key personnel from the USDA-ARS and USDA-NRCS, US Geological Survey, Bureau of Land Management, and other federal agencies and learn about career opportunities for undergraduates trained in the use of GIS. They will establish collaborations and partnerships with institutions and organizations using GIS for internship Opportunities for VSU students. The products of this project will be a course on GIS, GIS-integrated courses, trained faculty for teaching these courses, and a pipeline of potential pre-college students for the newly designed courses at VSU.

RESEARCH PROJECTS

Proposal Number: 9904115
Grant Number: 99-38814-8204
Project Director: Karamat Sistani
Award Amount: \$196,169

Institution: Alabama A&M University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS/NRCS
Denise Rowe 601 323-2280
Donald Surrency 706 545-2114

Environmental Impact of Land Applied Animal Waste: Biogeochemistry and Using Remote Sensing and Geographical Information Systems. The livestock industry produces 50% of the profits of U.S. agriculture, utilizes as much as 80% of the grain production for feed. Maintaining an environmentally sound livestock production system is critical to the economic viability of agriculture in Alabama, the Southeast, and the nation. U.S. News World Report, January 12, 1998, under the title of "United States Deep in Manure" reported that farm animals excreted 5 tons of waste for every American citizen in 1997. This increase, coupled with recent environmental disasters in a few states associated with mismanagement of animal waste, signals the need for livestock waste management systems that emphasize compatibility between environmental and production concerns. Hence, the major goal of this research is to develop new data collection techniques to provide a rational and environmentally sound basis for management of land-applied animal manure with regard to optimal application and state-of-the-art data collection and monitoring techniques. The results of this investigation will help in the development of quantitative waste-management recommendations, which are formulated on the basis of environmental considerations.

Proposal Number: 9904126
Grant Number: 99-38814-8307
Project Director: Allan Zipf
Award Amount: \$257,559

Institution: Alabama A&M University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Sukumor Saha 7601 323-2230

A Novel Strategy to Dissect Fiber-Specific Genes Using Unique Cotton Mutants. Cotton is the principal textile fiber and the second most important oil seed crop in the world. Fiber quality is based on genetically controlled character. Future advances in cotton improvement will be done by manipulating gene(s), either through crossing or genetic engineering. The identification of a locus as well as knowledge of its physiological function(s) are the required underpinnings before efficiently and successfully using that gene for fiber improvement. The knowledge gained may also help us to understand the genetic mechanism(s) controlling fiber length, strength and fineness, traits demanded by current yarn and textile production technologies. The objectives of this research effort are to: (1) determine the proteomics of the fiber mutants based on protein and isozyme analysis; (2) determine mutant-associated DNA markers, amplified by non-radioactive AFLP and SSR primer pairs, separated by *polyacrylamide* gel electrophoresis and an automated capillary electrophoresis system and (3) characterize the morphology and cytology of the fiber mutants at the whole plant level using light, fluorescent and confocal microscopy. This project is a paradigm for a multi-institutional, multi-disciplinary Capacity Building Program as it blends the expertise of an 1890 institution with USDA-ARS researchers, a leading research university and private industries, all focused on a dynamic collaboration to improve a crop with significant impact on the US economy. This is a step towards addressing a pivotal national priority.

RESEARCH PROJECTS

Proposal Number: 9904124
Grant Number: 99-38814-8203
Project Director: Patrick Igbokwe
Award Amount: \$156,836

Institution: Alcorn State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
W. R. Williford 601 686-3352
Clifton Peters 601 877-3849

Shiitake Mushroom Production in Mississippi. Shiitake mushrooms have been cultivated in the orient for hundreds of years. To improve productivity, cultivation has recently changed from growing shiitake on hardwood logs to production on enriched hardwood sawdust substrate. Low income small farmers in all rural areas of the South need a crop that will provide a consistent year-round income. This research study will also assist the USDA and collaborators by expanding the knowledge base in an emerging crop and exploring new sustainable agricultural practices for rural development. A substrate blend utilizing available southern bran and grain to enrich a sweetgum sawdust substrate will be compared to a traditional oak sawdust substrate. Low-cost, low-pressure substrate sterilization. The volume of substrate bag fills will be reduced and the incubation temperature will be increased. Yields will be translated into a market value and a cost-benefit analysis of these production methods will be used to develop enterprise budgets for rural development. Project outcomes will be disseminated through the Mississippi Shiitake Growers Association, Extension, RC&D and professional journals.

Proposal Number: 9904145
Grant Number: 99-38814-8220
Project Director: Anand Krishna Yadav
Award Amount: \$300,000

Institution: Fort Valley State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Freddi Hammenschlag 301 504-5286

Developing Biotechnological Approaches Towards Improving Peach Tree Longevity. Peach, the queen of fruits, is the third most important fruit crop in the temperate zone of the United States. Over 35% of national peach crop is produced in the Southeast where Georgia has traditional history of peach growing. However, during the past few decades, peach production especially in the southeastern United States has sharply declined. This research project will examine alternate protocols to improve peach longevity. The consumer concerns regarding environmental pollution, increased incidence of pathogen and pest resistance to pesticides and failure of chemical companies to renew registrations of pesticides suggest that alternatives, such as introduction of cold hardiness and disease resistance into existing peach cultivars, are a more viable approach to controlling crop losses both at present and in the future. Once the protocol for somatic embryogenesis has been developed and refined, Agrobacterium-mediated gene transfer of somatic embryos will be initiated. Reporter genes with different promoters will be used first to obtain transgenic peach plants. When additional genes that enhance cold hardiness, and resistance to *Pseudomonas syringae* and nematodes become available, they will be employed for further transformation attempts.

RESEARCH PROJECTS

Proposal Number: 9904180
Grant Number: 99-38814-8304
Project Director: Eugene Amoah
Award Amount: \$161,771

Institution: Fort Valley State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Gary Evans 301 504-7330

Genetic Manipulation of Goats Through Biotechnology. Goat gene and embryo manipulation and transfer research can accelerate genetic improvement and adapt local breeds for increased production. The objectives of this proposed research are: (1) to establish goat cumulus and oviductal epithelial cell lines *in vitro* and (2) to use electroporation to introduce IGF-I gene into these cell lines and use them as nuclei donors for the reconstruction of goat embryos by nuclear transfer (NT), culturing the resulting embryos *in vitro* and successfully transferring them to surrogate dams. The GEM-ARS laboratory, UGA, Emory University, Medical College of Georgia and University of Missouri, FVSU's collaborators, conduct genetic engineering research to use the muscle fiber, the mammary gland or milk as a target for expressing useful proteins for food and for pharmaceutical purposes. Scientists from collaborating institutions will use the opportunities during visits on this project to participate in workshops and give seminars in their field of expertise. Also the project will enable FVSU to improve its reference library, enhance its research and teaching status through workshops, publications in scientific journals for the institution to attract and retain highly capable students and faculty.

Proposal Number: 9904181
Grant Number: 99-38814-8306
Project Director: Seyoum Gelaye
Award Amount: \$294,146

Institution: Fort Valley State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Charles Bacon 706 545-3158

Biological Control of Gastrointestinal Nematodes in Goats Using Nematode-Trapping Fungi. Farmer interest in production of goats for meat (chevon) and milk is increasing rapidly in the southeastern United States (U.S.) due to increased demand for low-fat meat and non-allergenic milk products by health-conscious consumers and a growing ethnically diverse population in this area whose preferred diet includes chevon and goat milk or cheese. A major problem limiting growth of this industry is goats' high susceptibility to gastrointestinal nematode (GIN) infection, which can cause severe production losses or ultimately death of infected animals. The goal of this research is to determine the potential for biological control of GINs in grazing goats using nematode-trapping fungi. Three commercially-available strains of *D. flagrans* and a locally-isolated type will be cultured in the laboratory and tested *in vivo* for their nematode-trapping capabilities. The optimal strain will be cultured on barley grain and fed to Spanish meat goat does in dose-titration trials to determine the most efficacious spore level. The work will also enhance our capacity in chevon technology and our pasture and forage research capabilities, allowing inclusion of biological control of goat parasites as a component of our existing year-round goat grazing systems research program.

RESEARCH PROJECTS

Proposal Number: 9904106
Grant Number: 99-38814-8282
Project Director: George Antonious
Award Amount: \$253,243

Institution: Kentucky State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Alvin Simmons 843 556-0840
Michael Kasperbauer 843 669-5203

Insecticides from Wild Tomato: An Alternative for Limited Resource Farmers. Insects have developed resistance to many, in some cases all, of the synthetic insecticides used for their control. The mission of Kentucky State University Land-Grant Programs is to serve the needs of limited resource farmers. This project will expand the research capacity at KSU by opening a new area of pesticide structure/activity relationship, and discovery of biorational alternatives for insect control. Such alternatives, which have few or no side-effects on the environment, low toxicity to warm-blooded animals and humans, high efficacy against insects, and lower potential for insect resistance development, are in great demand. Employment of undergraduate laboratory assistants will provide students with invaluable experience on state-of-the-art analytical equipment and will prepare them for a job market where such skills are essential. Collaboration with researchers will be strengthened through the exchange of ideas, expertise, and identification of a new botanical formula that will be beneficial for all institutions for future large scale development of novel formulations for insect control in major agricultural commodities.

Proposal Number: 9904114
Grant Number: 99-38814-8200
Project Director: Steve Zeng
Award Amount: \$270,114

Institution: Kentucky State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Samuel Coleman 405 262-5291

Quality Characteristics and Yield Predictive Models of Goat Milk Cheeses. Goat milk cheese manufacturing in the United States is becoming a legitimate economic segment for small producers and processors in the rural area. This research study is designed to determine effects of milk composition and somatic cell counts in goat milk on the quality and yield of value-added goat cheeses and to develop yield predictive models for goat cheeses using the above variables. This project will demonstrate the direct economic impact of goat milk composition and provide easy-to-use formulas for goat milk producers and cheese makers. The outcomes of this project should promote the U.S. dairy goat industry by encouraging milk producers to produce higher cheese yield milk and by helping cheese makers to improve their operation efficiency and thus cheese yield and quality. The successful completion of this project will result in knowledge necessary to increase market potential and profitability of goat milk and cheese, thus increasing the net income of goat farmers. This project will fulfill part of the Institution's long-term goal to provide advanced and applicable information to the goat industry and enhance the research capacity at the Institutions on dairy goats and milk products.

RESEARCH PROJECTS

Proposal Number: 9904146
Grant Number: 99-38814-8206
Project Director: Steven Hart
Award Amount: \$268,247

Institution: Langston University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Larry Satter 608 263-2030

Sustainable Dairy Goat Milk Production From Forages. The price that goat producers receive for their milk has not increased over the last 15 years, whereas production costs have increased faster than inflation resulting in a serious economic squeeze for goat producers. The price of goat milk has not increased due to the growing importation of goat milk products. Producers have been increasingly turning to pasturing dairy cows to reduce their feed cost and maintain economic viability. The objective of this research is to develop a goat milk production system in which goats would obtain most of their nutrients from pasture. A pasture production system should reduce the cost of milk production as well as improving animal health. This production system could also be managed to produce organic milk at a lower cost. This research will result in a production system that is more sustainable because most of the nutrients are produced from grass, a renewable resource. The development of a pasture research facility will enable us to conduct future studies concerning goat milk production on pastures, including examining the different types of pasture plants and animal selection for adaption to pasture production systems. This will provide Langston University the opportunity to transfer urgently needed technology to the dairy goat industry. There is potential for Langston to collaborate by using the dairy goat as a model animal to conduct preliminary investigations for dairy cow research.

Proposal Number: 9904159
Grant Number: 99-38814-8205
Project Director: Ryszard Puchala
Award Amount: \$141,639

Institution: Langston University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Samuel Coleman 405 262-5291

Metabolic Changes Affecting Utilization of Poor Quality Diet by Goats. Most developing countries have an abundance of low quality feedstuffs; therefore, finding mechanisms that stimulate the utilization of low quality diets may have a tremendous influence on world food production. Nutritionally, there are two ways to increase animal production: (1) improve dietary quality, usually with a resultant increase in production cost; or (2) improve the utilization of the existing, often low quality, forage based diets. The proposed research may not only benefit the goat industry but may significantly improve animal production in developing countries where animal production largely relies on low quality feedstuffs. To determine the mechanism causing increased utilization of forage based diets it is proposed: (1) to investigate changes in nutrient flux across the gut and liver in growing meat goats; (2) to determine changes in blood metabolites and carcass composition of meat goats fed diets differing in protein level with or without betaine; and (3) to determine changes in lipid and amino acid metabolism in Angora goats fed low and high quality diets supplemented with rumen protected betaine. These objectives will be achieved through a collaborative multidisciplinary research effort between Langston University and the USDA-ARS facility at El Reno Oklahoma. The research will further foster existing institutional collaboration and cooperation and effectively contribute to our institutional information delivery system and strengthen student training programs.

RESEARCH PROJECTS

Proposal Number: 9904136
Grant Number: 99-38814-8202
Project Director: Sivapathasurderam Sureshwaran
Award Amount: \$161,792

Institution: South Carolina State University
Project Duration: 3 Years
USDA Agency/Collaborator: ERS
Stephan Crutchfield 202 694-5460

Characteristics and Consumer Preferences Affecting Marketing of Farm Raised Fish. The first Capacity Building Grant to evaluate cage catfish culture helped to build research capabilities in selected species of farm raised fish. This is an indicator of the success and the research capacity built by the first grant. To advance to the next level of attainment, the proposed research project plans to identify the consumer preferences and characteristics that will lead to effective market development of farm raised fish. The plan of operation involves five phases. Phase one: using focus groups to develop a questionnaire. Phase two: conduct consumer surveys. Phase three: analyze the data. Phase four: develop criteria for potential market segments. Phase five: Disseminate the results to producers, processors and other interest groups. The proposed project supports the teaching mission and the long-term goals of SCSU. In the context of enhancing research in the food and agricultural sciences, the project is relevant to ongoing research on food safety, including the effects of the seafood inspection legislation, and marketing of arm raised fish in South Carolina and elsewhere.

Proposal Number: 9904195
Grant Number: 99-38814-8219
Project Director: Grace Wasike
Award Amount: \$281,142

Institution: Southern University
Project Duration: 2 Years
USDA Agency/Collaborator: ARS
Weiying Tao 504 286-4393

Improvement of Kenaf Yarn for Apparel Applications. Agricultural products / wastes /derivatives are receiving more attention because of their potential as raw materials for biodegradable value-add products. Currently, various projects are dealing with the development of value-added textile products from agricultural by-products and waste. One of the crops being investigated in the Southern Regional Project for fiber applications is kenaf, an annual crop grown in Louisiana, Mississippi, and other southern states. Work is needed to improve kenaf fiber for apparel applications and to investigate alternative uses of kenaf fiber. This research project will study yarn characteristics of kenaf and its effects on blending, spinning method and mercerization on yarn performance. The objectives of the project are to: (1) investigate the properties of kenaf yarn made from different blends and by various spinning methods, and (2) evaluate the impact of mercerization on the properties of kenaf yam. The project will increase the research capacity of Southern University through purchase and update of equipment and partnership with USDA and Louisiana State University. The project will increase Southern University's capacity to contribute to the work being done at regional level and to the economy.

RESEARCH PROJECTS

Proposal Number: 9904135
Grant Number: 99-38814-8362
Project Director: Enefiok Ekanem
Award Amount: \$268,744

Institution: Tennessee State University
Project Duration: 3 Years
USDA Agency/Collaborator: FS
Rodney Busby 504 589-6682
D. McGranaham 202 694-5356

Contributions of Agriculture and Manufacturing to Rural Development in Southern States.

This study will assess the contributions of the agricultural and manufacturing sectors to the economy of rural areas in Alabama, Mississippi and Tennessee. The specific objectives of this study are to: (1) assess the relative importance of the manufacturing and food and fiber sectors to the urban-rural economies of selected southern states, (2) estimate the direct and indirect economic impacts of the manufacturing and food and fiber sectors on selected states' economies by analyzing output, employment and value-added multipliers for rural and urban areas, and (3) examine what factors have contributed to the decline in manufacturing in selected counties in selected states and evaluate the strategies adopted by communities in coping with these losses. The U.S. Forest Service, the Mississippi Rural Development Council through the Mississippi Rural Development Partnerships, Incorporated, the Economic Research Service of the USDA, the Southern Rural Development Center, Tuskegee University and Middle Tennessee State University will collaborate with Tennessee State University on this project. A center to be created from this project will establish a home page for disseminating information regarding the project's objectives, plans and provide linkages with other regional and national centers engaged in research.

Proposal Number: 9904191
Grant Number: 99-38814-8201
Project Director: Richard Browning, Jr.
Award Amount: \$280,901

Institution: Tennessee State University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
James Porter 706 546-3526

Impact of Breed and Tall Fescue Type on Endocrine Traits in Cattle. This project addresses reduced performance of beef cattle consuming tall fescue infected with the fungal endophyte *Neotyphodium coenophialum*. The endophyte produces ergot alkaloids that cause fescue toxicosis. Poor growth and lost thermoregulation are consequences of fescue toxicosis. Reduced performance of cattle on endophyte-infected tall fescue may reflect detrimental shifts in nutrient utilization. A collaborating scientist from USDA-ARS will participate by providing expertise in the areas of plant biochemistry and mycotoxins and performing tests to assess fungal and ergopeptine content of the experimental diets. The project ties in with the current USDA-ARS research initiatives on fescue toxicosis. Student participation during this project is expected to influence career decisions. The animal science research environment at TSU will be enhanced through communication with other universities. Assistantships will allow TSU students to become more involved in animal research, possibly leading to increased diversity of the nation's animal science doctoral programs. Data will be presented to the American Society of Animal Science and the Southern Extension and Research Information Exchange Group on Tall Fescue and published in peer-reviewed scientific journals and in extension and industry reports.

RESEARCH PROJECTS

Proposal Number: 9904134
Grant Number: 99-38814-8280
Project Director: Channapatna Prakash
Award Amount: \$161,770

Institution: Tuskegee University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Marvin Scott 515 294-7825

Development, Nutritional Evaluation and Biosafety Testing of “High Protein” Sweetpotato.

This project will introduce a nutritional protein gene for enhancing the protein content and quality in two sweetpotato varieties of importance to the United States, and will ensure their biosafety and nutritional value through *in vivo* testing. The principal investigators have developed a sweetpotato with a high protein content and enhanced protein quality. This project will extend the success in the development of “high protein” sweetpotato lines to varieties of importance to the United States farmers and consumers. Since sweetpotato is an important source of protein, calories and vitamins especially in many developing countries, success of this project will have a tangible impact on the nutrition of resource-poor people, especially children and women where protein malnourishment is common with often tragic consequences. This project is in line with USDA’s goal of improving the nutritional quality of our food and to ensure genetically modified foods meet the highest standards of safety for human and livestock consumption. The project will provide the resources necessary to continue to train minority graduate and undergraduate students in agricultural biotechnology. It will also reinforce the university’s Center for Plant Biotechnology Research as a center of excellence of such training.

Proposal Number: 9904166
Grant Number: 99-38814-8305
Project Director: Guohao He
Award Amount: \$236,139

Institution: Tuskegee University
Project Duration: 3 Years
USDA Agency/Collaborator: ARS
Roy Pittman 770 229-3252

High Resolution Mapping and Cloning of Disease Resistance Loci in Peanut. This research project will isolate disease resistance loci in peanut through intensive analysis of the peanut genome using DNA markers and the positional cloning technique. Foliar diseases cause considerable havoc on the peanut crop in the U.S. and around the world resulting in substantial losses. Availability of DNA markers and cloned disease resistance genes would enable rapid development of resistant cultivars and also contribute to our understanding of mechanisms of disease resistance in plants. A bacterial artificial chromosome library of the peanut genome will be developed in collaboration with scientist at USDA, Texas A&M and the Samuel Roberts Nobel Foundation. The target region will be physically mapped to saturation and chromosome walking studies will be conducted to eventually isolate the resistance loci. This project on peanut genome will enhance TU’s biotechnology program and help integrate this program with the national peanut improvement efforts at USDA/ARS and other research institutions. Polymorphic DNA markers in cultivated peanut have been identified by the principle investigators for the first time. Therefore, this project would be a logical extension of this research to enhance disease resistance in peanut. The research would also provide necessary resources to continue to train minority graduate and undergraduate students in agricultural biotechnology and reinforce its Center for Plant Biotechnology Research as a center of excellence in such training.

RESEARCH PROJECTS

Number: 9904183
Grant Number: 99-38814-8281
Project Director: T. A. Mollett
Award Amount: \$299,024

Institution: University of Maryland Eastern Shore
Project Duration: 3 Years
USDA Agency/Collaborator: APHIS
Leslie Terry 410 269-0057

Impact of Population Reduction on Movement, Health and Reproductive Behavior in Nutria. This project will study impacts of population reduction on movement, health and reproductive behavior in nutria. This information is necessary to develop effective control strategies to prevent further damage by nutria. Several federal, state, and private partners have agreed to collaborate with USDA and UMES to achieve the objectives of this research project. This research will allow the investigators to determine the sex and age classes of nutria to be targeted, the best time of the year to concentrate population reduction efforts, and the most efficacious harvest methods to control nutria populations. The project will use two treatment areas (intensive nutria harvest) and two control areas (no nutria harvest) to analyze changes in nutria movements, population densities, reproductive strategies, and health. Population estimates will be made repeatedly in the treatment and control areas to relate population dynamics to animal movement behavior, health parameters and reproductive function. Specific objectives are to: (1) evaluate the effects of population density on home range and movement patterns of nutria; (2) ascertain if the health of the nutria population is related to harvest intensity; (3) determine how population dynamics of nutria affect their reproductive behavior and performance; and (4) elucidate the temporal patterns of gonadal steroid secretion in nutria during their reproductive cycle.

Proposal Number: 9904128
Grant Number: 99-38814-8199
Project Director: Wondi Mersi
Award Amount: \$266,645

Institution: Virginia State University
Project Duration: 3 Years
USDA Agency/Collaborator: NRCS
Cathy Seybold 541 737-1786

Removal of Pesticides from Plasticulture Runoff Using Vegetative Filter Strips. The insecticide, endosulfan and copper-based fungicides in plasticulture runoff are contaminating the nation's estuaries and fresh water systems. This is a concern because these pesticides are toxic to aquatic life. Current in-field practices are largely ineffective because most are incompatible with the profitable plasticulture vegetable production. Presently, there is very little scientific information on off-field best management practices that can abate the transport of insecticides and fungicides from plasticulture runoff. The goal of this research is to provide quantitative data that will aid in the design of vegetative filter strips that can reduce insecticide and fungicide loads in plasticulture runoff. The plan is to compare the effectiveness of two filter strip grasses, switchgrass and tall fescue. The purpose is to provide the grower a choice to use either grass or in combination based on their effectiveness. Results will be shared at scientific meetings and symposiums to initiate collaborative efforts and partnerships in future research. Fact sheets and technical notes on effects of vegetative filter strips will be developed for dissemination.